

**LANDSCAPING****§153.075 TREE AND LANDSCAPE REGULATIONS.**

**(A) Purpose.** The purpose of this section is to encourage the preservation, planting, and maintenance of vegetation within the town limits. It assumes that trees, shrubs, and other vegetation are important to the beautification of the town, the well being of its residents, and the preservation of our natural environment, reflecting the value placed on vegetation by the community. This purpose is carried out in the following ways:

- (1) Provides guidelines for preserving existing trees.
- (2) Regulates the planting of trees and shrubs.
- (3) Provides attractive views from roads and adjacent properties.
- (4) Screens visually undesirable uses from view.
- (5) Establishes guidelines for tree canopy coverage.
- (6) Establishes procedures for fulfilling these purposes.

**(B) Applicability.** This section applies to all properties in business, office, industrial, multi-family districts, and any nonresidential use in a residential district. See §153.066 Special Highway Overlay District for special requirements on properties bordering designated portions of NC51.

**(C) Benefits.** Benefits derived from landscaping and vegetation protection/replanting include:

- (1) Improved control of soil erosion.
- (2) Moderation of storm water runoff and improved water quality.
- (3) Interception of airborne particulate matter, and the reduction of air pollutants.
- (4) Enhanced habitat for wildlife.
- (5) Reduction of noise and glare.
- (6) Climate moderation.
- (7) Definition of exterior spaces.
- (8) Increased property value.

(9) Promotion of energy conservation through shading and cooling effects.

(10) Reduction in the need for watering of vegetation.

(11) Maintenance of indigenous species.

(12) Maintenance of the visual character of the community.

(13) Psychological health benefits derived from natural vegetation and open spaces.

**(D) Definitions.** For the purposes of this Section, and unless the context clearly indicates or requires a different meaning, the following definitions shall apply. Words and phrases not defined here shall be interpreted so as to give them meaning they have in common usage.

**Applicant.** Any person, party, partnership, corporation or other business entity that is seeking the Town's approval of a proposed plan, or permit, or variance to this section.

**Caliper.** Diameter measurement of tree-trunk taken at six inches above ground level for trees up to and including four inches in caliper. For larger trees, measurement of caliper shall be taken at 12 inches above ground level.

**Casualty Loss of Nature.** A loss of value or property resulting from an act of nature – fire, winds, ice-storms, etc. – that is beyond normal human control.

**Clear-Cut.** The removal of all trees on a site.

**Construction Site.** A site where any land disturbing activity is to occur.

**Construction Period.** The time period on a development site from the granting of a construction permit until the issuance of a final certificate of compliance.

**DBH. (Diameter Breast Height).** The diameter of a tree four and one-half (4 ½) feet above the average ground level.

**Deciduous.** Plant materials that drop all of their foliage preceding their dormant season (usually the winter).

**Developed Properties.** Land that has been converted to a specific purpose by addition of planned and structured improvements.

**Drip Line.** An imaginary vertical line extending from the outermost portion of the tree canopy to the ground.

**Existing Tree Canopy.** The tree canopy that has existed for at least 3 years on a site as verified by aerial photographs.

**Evergreen.** Plant materials that retain foliage throughout the year.

**Impervious Cover.** Buildings, structures and other paved, compacted gravel, or compacted areas, which by their dense nature do not allow the passage of sufficient oxygen and moisture to support and sustain healthy root growth.

**Interior Planting Area.** An area on private property that lies inside of the areas designated for streetscape, or perimeter plantings.

**Landscaping.** The preservation and/or modification of an existing landscape for an aesthetic or functional purpose. Live vegetation materials required for development.

**Landscape Establishment Guarantee.** A bond, irrevocable letter of credit, or other surety held by the Town until the satisfactory conclusion of the three-year landscape establishment period.

**Landscape Establishment Period.** A period of three years commencing with the acceptance by the town of an executed landscape plan.

**Large Maturing Tree.** A tree whose height is greater than 35 feet at maturity.

**Loading Area, Service Area, or Outdoor Storage Area.** An area with or without walls that is used for trash or garbage collection; vehicular loading and unloading; or outdoor storage.

**Mass Grading.** Changing the grade over an entire construction site through cut and fill operations. Mass Grading is made possible by clear cutting.

**Native (Indigenous) Vegetation.** Vegetation that was growing in this geographic area before colonization by European settlers - as cited by the North Carolina State University Agricultural Extension Service.

**North Carolina Champion Tree.** A North Carolina Champion Tree is any tree that is listed in the North Carolina Big Tree List.

**Planting Area.** Landscape area reserved for the purpose of providing growth area for required plant material.

**Planting Season.** The recommended time of the year for planting, normally September through May that is timed to avoid the summer heat.

**Planting Strip.** A strip of land, adjacent to a public right-of-way that is reserved for landscaping purposes.

**Protected Tree.** An individual tree having special regulatory procedures for removal on public and private property. Protected tree include all trees on public property, North Carolina Champion Trees, and Matthews Specimen Trees as designated by the Matthews Board of Commissioners. Protected trees can include individuals or all individuals in a stand on a construction site designated to be preserved on the required landscape plan.

**Riparian Buffer.** A biologically diverse community consisting of trees, woody shrubs, and groundcover that exists or is planted along the banks of rivers, creeks or intermittent and perennial streams.

**Root Protection Zone.** An area measuring approximately 18 to 24 inches deep and at a horizontal distance from the trunk in all directions equal to one foot for each inch of DBH.

**Screen.** A structure and/or plant material providing enclosure and a visual barrier between the area enclosed and the adjacent property.

**Selective Grading.** Clearing and/or grading a development site such that selected, existing vegetation is preserved.

**Shrub.** A woody plant normally containing multiple stems and a mature height of less than 12 feet.

**Small Maturing Tree.** A tree whose height is generally less than 35 feet at maturity.

**Specimen Tree.** A Specimen Tree is any tree designated by the town as having unique value, historical interest, or other noteworthy characteristics. A tree may be considered a specimen based on its size, age, rarity, history, or ecological significance as determined by the Town's Landscape Manager and a Certified Arborist consultant.

**Streetscape Plan.** A plan that specifies planting strips, tree species, sidewalk locations, and other design aspects along public and/or private streets

within Matthews. Such plans are effective following approval by the Board of Commissioners.

**Streetscape Tree.** Any tree planted within or adjacent to a public right-of-way.

**Topping.** Any pruning practice that generally employed on the top of a tree that indiscriminately makes cuts without regard to the proximity of a side branch. The practice is very detrimental to tree health.

**Tree Canopy.** The combined crown areas of all trees on a tract of land.

**Tree Evaluation Formula.** A formula for determining the value of trees and shrubs as published by the International Society of Arboriculture.

**Tree Protection Area.** Those areas designated for the protection of both preserved and planted trees depicted on the Tree Protection and Landscape Plans.

**Tree Stand.** A group of trees in close spatial proximity that can be treated as a unit for the implementation of a tree protection area.

**Vegetation Survey.** An inventory and assessment of existing vegetation, particularly trees, on a site prior to any land disturbing activity, and/or any vegetation that existed on the site prior to clear cut activity that occurred within the previous three years.

**Xeriscape.** A landscape site planted with plant materials that have a very low water requirement or are very drought tolerant as designated by the North Carolina State University Agricultural Extension Service.

**(E) General Planting and Screening Requirements.** Planting or screening may be required to meet different standards depending on where on a property they are located. The types of required landscaping that may be applicable are as follows:

(1) Streetscape Landscaping: Trees shall be required on all developed properties that abut a public right-of-way in accordance with Section F of this section.

(2) Perimeter landscaping: Existing or new trees and shrubs on developed properties shall be required along side and rear property boundaries in accordance with §153.075(G).

(3) Interior Landscaping: Existing or new trees and shrubs on developed properties shall be required in and around on-site parking lots and other interior structures in accordance with §153.075(H).

(4) Screening: Existing or new trees and shrubs and/or structures such as walls or fences shall be required in accordance with §153.075(I):

(a) along all side and rear yard property boundaries abutting an existing residential use or residentially zoned area; and

(b) around loading areas, service areas or outdoor storage areas which are visible from a public right-of-way.

(5) Tree Canopy Requirement. Landscaping in the form of trees shall either be retained or planted on site to meet minimum canopy coverage in accordance with §153.075(J).

**(F) Streetscape Landscaping.** Except for the Downtown Overlay District, which has its own streetscape requirements, the following shall be required for all nonresidential uses on all developed properties:

(1) A planting strip whose total length shall be equal to the total length of the property line adjacent to the public right-of-way, or in the public right-of-way if sufficient room exists between curb and sidewalk, exclusive of access drives and their sight triangles. The width of the strip shall be a minimum of eight (8) feet and shall generally start immediately adjacent to the street side property line.

(2) Trees shall be planted, if not existing, within the planting strip with large maturing trees. Large maturing trees shall be spaced no greater than 40 feet apart with a minimum of one tree planted on all properties with frontage greater than 30 feet. Each tree shall be a minimum of 2 inches caliper and have a minimum height of eight feet from the ground surface. See §153.075(Q) for a schedule of recommended large maturing trees.

(a) If the use of large maturing trees is considered inappropriate for the site, then a written explanation of why they cannot be used shall be made to the town.

(b) Where overhead power lines or other obstructions prevent the use of large maturing trees, then small maturing trees shall be used. Small maturing trees shall be spaced no greater than 30 feet apart. See Section P of this chapter for a schedule of recommended small maturing trees.

(c) No large maturing tree shall be planted within 35 feet of an overhead utility line as measured from the closest wire.

(d) Trees shall be selected so that a mixture of species shall be planted or preserved. If a property has greater than 300 feet of frontage on any one street, a minimum of three different species shall be planted. If less than 300 feet of frontage exists, than only a single species is required.

(e) When an existing or proposed sidewalk is within one (1) ft. of the property line, then trees must be located a minimum of four (4) feet off the right-of-way.

(3) The planting strip shall not be paved or used for automobile parking and shall have vegetative or organic ground cover and/or beds of flower plants or bulbs mulched and kept weed and litter free by the property owner or may be planted in grass and mowed on a regular basis. In addition to the required trees and surface treatment within the planting strip, shrubs and additional trees may be included at the option of the landowner. Xeriscape plantings are strongly encouraged.

(4) In the case of unusual site factors that would make the strict adherence to this section serve no useful purpose, the Planning Department may waive all or part of the requirements of this section. A waiver may be requested by a written statement explaining the mitigating circumstances on or off the site. It must be supported by documented facts. Waivers shall be considered as long as the spirit and intent of this section maintained.

(5) Where streetscape trees are to be located in the public right-of-way, trees must be inspected by the Town's landscape manager before planting.

See §153.075(P) for landscape maintenance requirements.

**(G) Perimeter Landscaping.** Plantings along those property boundaries not facing a public right-of-way are designed to provide a sense of boundary between non-residential properties. Whenever practical, such plantings shall include preserved vegetation preserved on the site.

(1) A combination of trees and shrubs shall be arranged along the non-street rear and side perimeters. This landscaping will consist of a minimum of one tree and ten shrubs for each 50 lineal feet, not including the streetscape-planting strip. The planting may be arranged in a single row, staggered, or may be clustered or otherwise arranged anywhere within 15 feet of the property line to allow for maximum flexibility and landscaping design.

(2) A combination of large trees and small trees shall be planted with large trees comprising at least 50% of the total. Large trees shall be a minimum of 2 inches caliper and have a minimum height of eight feet from the

ground surface. Small trees shall be a minimum of 1-inch caliper and have a minimum height of six feet from the ground surface.

(3) Trees shall be selected so that a mixture of species shall be planted. A minimum of three different species shall be planted along every 300-foot section.

(4) As long as the space allows, shrubs shall be selected so that a mixture of species shall be planted. A minimum of five different species shall be planted along every 300-foot. Likewise, unless design elements require it, no more than 10 individuals of any one species shall be planted in a group or row or staggered row.

(5) The minimum depth of a perimeter landscape area shall be six (6) feet from any property line, although it shall generally be fifteen (15) feet.

(6) The side or rear yard perimeter landscape area may be extended beyond fifteen (15) feet when unusual topography of a site, elevation of a site, the size of the parcel involved, the presence of a utility easement along the property edge, or other factors exist which make the strict adherence to this section serve no useful purpose. In those cases, the Planning Department may waive the 15 foot requirement as long as the spirit and intent of this section are maintained.

(7) Whenever feasible, preserved vegetation shall be used. For preserved plants to be used to satisfy part or whole of this requirement, the size, species, condition, and location on the site should be noted on the required landscape plan. The spacing requirement for planted trees and shrubs may be waived when the intent of the perimeter landscape requirement can be satisfied by preserved plants.

(8) No wall or fence may be placed within the established perimeter landscape zone when established at a 15 foot width. Where the established perimeter landscape area is less than 15 feet, a fence or wall may be used and can be located no closer than 6 feet to the property line. The finished side of the fence shall face outward from the property. Any plant material required under this section shall be located between any fence and the property line.

**(H) Interior Landscaping.** Landscaping is required for parking lots and other areas of impervious surface.

(1) **Parking Lot Landscaping.** Landscaping is required for parking lots to reduce the aesthetic impacts resulting from paving or the removal of natural vegetation from large areas; to reduce the noise, heat, glare and dust associated with parking lots, and to control the direction and velocity of surface water runoff. Within the requirements of this section, parking lots should be visually

hidden from view from public right-of-ways as much as possible.

(a) Applicability. Landscaping shall be required for all off-street parking facilities with 10 or more spaces.

(b) Landscaping Required.

(1) To meet this requirement, landscaping shall be located within the parking lot perimeters, generally squared or rounded off in shape, including the planting islands, curbed areas, corner islands, parking spaces and all interior driveways and aisles except those with no parking spaces located on either side.

(2) Planting islands, either separate or protruding from the perimeter of the parking lot, shall be appropriately located in the parking facility to create parking sub-areas and to help establish distinct patterns of traffic flow.

(3) At least one preserved or planted tree with appropriate minimum caliper and height shall be provided for every ten provided parking spaces, or fraction of ten spaces.

(4) If less than 30 parking spaces are present on the development site, than small maturing trees may be used. If there are greater than 60 parking spaces on the site, than 50% of the trees planted must be large maturing species, unless there are overhead utilities that require smaller maturing trees. A written explanation must be provided for a waiver of this 50% requirement.

(5) Any planted area in any island shall have all straight-line dimensions of at least 12 feet and total area of at least 256 square feet for large maturing trees, or 8 feet straight-line dimensions and 144 square feet area for small maturing trees. Smaller protrusions from planting islands shall not have trees planted within them.

(6) No parking space shall be located more than 60 feet from a tree either in an island or outside of the parking lot. All parking spaces shall be blocked or curbed to prevent vehicles from overhanging planting islands or landscaped yards by more than one foot or damaging adjacent fences or screens.

(7) Trees need not be uniformly distributed throughout the parking lot when existing trees are being preserved to meet the parking lot landscaping requirements, it is more important

that the maximum root zone be made available to the trees planted or preserved on site, and that the maximum shading of parking lot surface area be achieved.

(8) The minimum number of different species that may be used to meet these requirements are listed below:

Total Number of Trees Required	Minimum Number of Tree Species Required
24+	3
12-23	2
1-11	1

(9) If parking is within 12 feet of a street side property line, then a row of shrubs should be planted parallel to the street. The shrubs shall be planted no greater than 5 ft. on-center, and should be of a species that matures between 1 to 3 feet in height.

(2) Post Construction Ordinance. In addition to the provisions for tree canopy and landscaping on developed parcels, requirements of the Post Construction Ordinance shall also apply. Where the requirements for 10 or 17.5% undisturbed open space can be met with existing or new tree canopy requirements of this section, they may be counted toward each.

(3) SWIM Buffers. Preservation of vegetation along designated, riparian buffers shall comply with the requirements of §153.100.

(4) Other Interior Landscaping. Areas of a development site left in existing natural state, foundation plantings, and other interior landscaping elements may be included when land disturbing activity is proposed on a site. These elements may be eligible to qualify for general standards listed within this section.

#### **(I) Screening.**

(1) Site Perimeter Screening. Screening is required along all side and rear yard property boundaries abutting an existing residential use or residentially zoned area. Screening shall be designed and installed to provide a visual buffer of at least 75% opacity to a height of six (6) feet. When screening is to be accomplished with plant materials, this height and opacity must be reached within four growing seasons. Whenever practical, plantings to achieve screening shall include preserved vegetation, especially trees, existing on the site.

(a) Screening shall normally be provided through one of four options, as listed in the table below.

Option	Plant Materials		Bed Width
	Type	Quantity	
1	Large Trees	4	20 feet
	Small Trees	2	
	Shrubs	12	
2	Large Trees	4	15 feet
	Small Trees	2	
	Shrubs	16	
3	Large Trees	5	10 feet
	Small Trees	2	
	Shrubs	20	
	Wall or Fence at min. 10' from property line		
4	Large Trees	4	20 feet
	Large Shrubs*	10	
	* planted in a triangular manner ten (10) feet apart at centers		

(b) To determine the total number and variety of plants required for each screening alternative, the length of each side of the property requiring a screen, minus the area covered by a sight distance triangles, shall be divided by 100 and multiplied by the number of each kind of plant shown for the chosen required screen (rounded off to the nearest whole number).

(c) Fences or walls within any non-residential district or for any non-residential use in a residential district shall be placed behind the interior side of the required plant materials and shall not be over seven (7) ft. in height.

(d) In the event of unusual site disturbances, such that none of the four options given in §153.075(I)(1)(a) will create the intended level of screening, then an alternative screening plan may be presented to the Planning Department for review and approval. This alternative plan must include documentation describing how the proposed alternative will provide effective visual screening, or why there is no feasible way to adequately screen view of the subject site from the adjacent property.

(2) Loading area, service area or outdoor storage area screening.

(a) Screening around all loading and service areas and all outdoor storage areas which may be visible from a public right-of-way, shall be required in all

non-residential districts or for a non-residential use in a residential district. The screening may be located anywhere on the property, subject to other pertinent provisions of this section.

(b) Any vegetation used to comply with the provisions of this section must be in a planting bed at least 5 feet wide. This area may contain any type screening materials sufficient to visually block the view of the loading and storage use area.

(c) If a wall or fence is used alone, then the area devoted to the screen need only be wide enough to accommodate the screen and allow for its maintenance. The composition of the screening material and its placement on the lot will be left up to the discretion of the property owner, so long as the purpose and requirements of this section are met.

(d) Within non-residential districts walls and fences used for screening purposes must be at least 6 feet in height, measured from the ground level to the top of the structure, and measured along the entire length of the finished side of the structure.

(3) Screening standards. The following list contains specific standards to be used in installing screening:

(a) Fences and walls used for screening shall be constructed in a durable fashion of brick, stone, other masonry materials or wood post and planks with no more than 25% of the fence surface left open. The finished side of the fence shall face the adjoining property.

(b) Where a fence or wall is used as part of a required screen area, any required plantings accompanying the fence or wall shall be located on the side of such fence or wall opposite the new development.

(c) Shrubs used in any screening must be at least three feet tall when planted and no further apart than five feet. A minimum of 50% of the required shrubs shall be evergreen. They must be of a species and variety and adequately maintained so that an average height of five to six feet could be expected as normal growth within four years of planting. Shrubs planted on a berm may be of a lesser height, provided that the combined height of the berms and plantings is at least six feet after four years.

(d) No part of a berm shall be left as bare soil. No slope of a berm shall exceed one foot of rise for every three feet in plane. No part of a berm shall intrude into the existing or transitional right-of-way. At least 75% of required plantings shall be planted on the top

of the berm and opposite the new development. Plant species on a berm shall be selected to adapt well to slope and drainage conditions found on the berm.

(e) Screening requirements may be waived when screening is already provided. There may be cases where the unusual topography or elevation of a site, or the size of the parcel involved, or the presence of required screening on adjacent property would make the strict adherence to the ordinance serve no useful purpose. In those cases, the Planning Department may waive the requirements for screening so long as the spirit and intent of this section and the general provisions of this section pertaining to screening are adhered to. This section does not negate the necessity for establishing screening for uses adjacent to vacant property.

#### **(J) Tree Canopy Requirements.**

##### **(1) Canopy Preservation Requirement**

(a) Purpose. The amount of tree canopy covering a site is an indication of the site's ability to retard storm water run-off, mitigate air pollution, and contribute to site-cooling effects. The tree canopy requirements outlined here may also be applied to the minimum Undisturbed Open Space requirements of the Post Construction Ordinance.

(b) Requirements. A percentage of tree canopy is required to be maintained or created on any development site or on any site of any land disturbing activity. If a site over 1 acre in size was formerly in a forested state and 50% or more of the land area was clear cut within three years of the plan submittal date for any land disturbing activity, then the tree canopy preservation requirements must be applied as though the site was not clear cut. It will be the applicant's responsibility to provide proof that any clear cutting activity on the site took place greater than three years prior to the current submittal date.

(1) The amount of existing canopy that must be preserved on the site during development is determined by two factors: the zoning district classification; and the percentage of existing tree canopy present before any land disturbing activity, as indicated below:

#### **Minimum Tree Canopy Requirements**

Zoning District	Required Tree Canopy (%)
R-20, R-15, %-12, R-9, R-MH, R-15MF, R-12MF, CrC, RU, R-VS, R/I	20
O-15, O-9, B-1, B-2, B-3, B-D, AU	20
I-1, I-2	15
Highway Overlay	20
HUC Downtown Overlay	5

Where a development site is within an overlay district, the overlay canopy requirements shall take precedence over the underlying zoning category.

(2) Whenever the existing tree canopy is greater than 20 percent of the total property area, then a minimum canopy must be preserved as defined in §153.075(J)(1)(b)(1) above.

(3) Whenever the existing tree canopy of the site prior to land disturbance is less than 20 percent of the total property area, then the percentage of canopy as defined in §153.075(J)(1)(b)(1) above must be achieved by a combination of preservation and new planting.

##### **(c) Calculation of Canopy Areas.**

(1) The baseline canopy measurements on a proposed development site shall be performed by the Town prior to approving the landscape plan. The percent canopy cover will be calculated by aerial photographs and verified, if feasible, by ground measurement. The preservation requirement will be provided to the property owner for incorporation into the Landscape Plan. The property owner can provide baseline canopy information to the town if so desired. Dedicated rights-of-way, storm water facilities and easements that do not incorporate trees, utility easements, and existing ponds, lakes, or perennial streams may be subtracted from the total property area before the preservation requirements are calculated.

(2) Each large maturing tree, whether preserved or newly planted, is calculated to provide 2,000 square feet of tree canopy. Newly planted large maturing trees must be a minimum of 2" caliper at time of planting.

(3) Each small maturing tree, whether preserved or newly planted, is calculated to provide 400 square feet of tree canopy. Newly planted small maturing trees must be a minimum of 1" caliper at time of planting.

(4) A preserved stand of at least four (4) trees with intertwining limbs is calculated to provide a tree canopy equivalent to twice the area of continuous crown. A newly planted group of trees, which may be both large and small maturing varieties, is calculated to provide a combined canopy coverage equal to the individual trees.

(5) Preserving a Specimen Trees is calculated to provide a tree canopy equal to three (3) times the actual square footage contained within its dripline.

(6) All preserved trees designated to meet this canopy coverage requirement must be protected according §153.075(M)(2).

(7) All tree planting requirements cited in §153.075(F) through (I) may be credited toward the 20% requirement.

(8) Existing/new tree canopy will be calculated by these formulae:

$$\begin{aligned} \text{TLD} - \text{U} &= \text{NLD} \\ \text{NLD} \times 20\% &= \text{RTTC} \end{aligned}$$

TLD:	Total Land Disturbance Area in sq ft (the entire identified site)
U:	Any utility easements, road rights-of way or other area allowed to be excluded
NLD:	Net Land Disturbance Area
RTTC:	Required Total Tree Canopy

When Existing Tree Canopy is calculated in excess of 20% of the NLD, then all of the RTTC must be in preserved trees

When Existing Tree Canopy is calculated at less than 20% of the NLD, then all of the existing tree canopy must be preserved, and newly planted trees must be added to achieve the RTTC.

(d) Mitigation for Required Tree Canopy may be Provided Concurrent with Mitigation for Undisturbed Open Space in the Post Construction Ordinance.

(1) Where a development site must meet the provisions of the Post Construction Ordinance and chooses to comply with the Undisturbed Open Space provisions through one of the mitigation measures, then those mitigation measures will also be allowed to be used to meet the tree canopy requirements of §153.075(J).

(2) A development site which does not fall under the requirements of the Post Construction Ordinance but would like to apply the mitigation provisions found in that regulation to required tree canopy of §153.075(J) may request a zoning variance. The property owner shall submit a zoning variance application with the Landscape Plan submission including full documentation on what tree canopy requirements are desired to be met through mitigation, and an explanation of the hardship.

#### **(K) Vegetation Survey.**

(1) A vegetation survey is required on all sites other than single family residential prior to any land disturbing activity or any applications for grading, building, or rezoning. This vegetation survey should be completed in conjunction with a Concept Plan to meet the Post Construction Ordinance requirements, when applicable.

(2) Elements required as a part of the vegetation survey include: a map, drawn to scale, and a written component, identifying any potential Specimen Trees on site, and all existing trees and vegetation eligible to be preserved. Where clear cutting activity occurred within the previous three years, then all trees that were previously on the site need to be identified and quantified in some way. A general grade of the condition of each tree shall be provided.

(3) A certified arborist, landscape architect, or forester shall evaluate the vegetation survey to determine what existing vegetation will be preserved, and how it can be incorporated into the development plans for the site. Root protection zones for all trees to be preserved must be indicated on the vegetation survey.

**(L) Vegetation Preservation Planning.**

(1) Criteria for Evaluating Trees and Vegetation Preservation. Healthy and structurally sound trees, either singularly or in stands, located anywhere on the construction site should be considered for preservation, and should be evaluated for designation as protected trees.

(2) Credits for Preserved Trees. After the trees meeting the minimum Tree Canopy are identified, credits to meet site requirements may be granted by the Planning Department for healthy trees of at least six (6) inch caliper for large maturing species and three (3) inch caliper for small maturing varieties preserved anywhere on site. Tree credit may be used to satisfy streetscape, screening, and other mitigation requirements including loss replacements.

(3) Trees preserved to meet streetscape, screening, and buffer requirements can receive credits according to the following:

Preserved Trees (DBH in inches)	Credit toward planting requirements (Number of trees required)
2 – 5	1
6 - 17	2
18 +	4

(4) Vegetation Preservation Schedule. When it has been decided which vegetation is to be preserved, then this written and graphic information is placed on a schedule for incorporation into the general Landscape Plan for the site. This Vegetation Preservation Schedule delineates to the owner, any contractors, and to the Town which vegetation is to remain on site and to be protected during construction. The Guide for Matthews Tree and Vegetation Requirements outlines the format for this Schedule. The Vegetation Preservation Schedule will note the map locations where trees, shrubs and ground covers will be preserved, their species (botanical and common names), size (DBH), general condition rating, individual tag number and their contribution to any site-required landscaping will be provided both on a map drawn to scale and in an accompanying text. When included on an approved landscape plan, all trees listed in the schedule shall become Protected Trees.

- (a) Each tree to be preserved shall be tagged on-site with an identifying tree number.
- (b) Trees with potential Specimen Tree status shall be marked as such in the field and noted on the Schedule.
- (c) If the construction site contains existing trees that are not scheduled for preservation, a written statement citing the reasons shall be

included in the application materials. A map of the site must accompany the written statement.

(5) Protected Trees. Protected trees include North Carolina Heritage Trees, Matthews Specimen Trees, and any other trees designated on an approved landscape plan to be preserved during any land disturbing activity. Preservation standards are outlined at §153.075(N).

**(M) General Landscape Plan.** A landscape plan is required for any land disturbing activity in any business, office, industrial, or multi-family district, and for nonresidential uses in a residential district

(1) Submittal. Landscaping plans shall be submitted to the Planning Department for administrative approval, with review, if needed, by the town's Landscape Manager.

(2) Requirements Required elements to be included in this submittal, which may be combined on documents and maps for clarity are:

- (a) A development summary that includes total acres in development, proposed use(s), total building square footage, required parking and provided parking spaces.
- (b) An accurate drawing of property boundaries.
- (c) Name of the project, owner, name and address of engineer, scale, date and north arrow.
- (d) Existing topography, watercourses and water bodies, floodplains and floodways, or other areas that would require extensive clearing and grading or alteration for development. This may be combined with the Vegetation Survey of the site.
- (e) Location of proposed buildings, driveways and parking areas.
- (f) Location of loading areas, service areas or outside storage areas and required screening.
- (g) A copy of the Vegetation Survey map and written document and the Vegetation Preservation Schedule.
- (h) Locations of all preserved trees and their Root Protection Zones including all existing and finished grades at these locations.
- (I) Locations of required screening buffer strips, riparian buffers, canopy preservation

locations, streetscape, perimeter plantings, interior plantings, and screen landscaping.

(j) Details of required landscaping showing species, dimensions, and spacing of planted materials and the use and protection of existing vegetation. Plans shall normally include a scaled drawing and a written component that includes planting specifications.

(k) A completed irrigation plan or written statement citing the purpose for not complying with the installation requirement.

(l) Proposed location of any free-standing sign to be employed on the site.

(m) A completed Landscape Establishment Guarantee showing the calculations for the bond amount.

(n) A statement on the anticipated completion date of the installation or land disturbing activity.

(3) Landscape Plan Approval.

(a) No land disturbing activities can commence on site until the submitted Landscape Plan is approved by the Planning Department.

(b) The Town may inspect the development site prior to plan approval. The property owner or developer will be notified prior to such a site visit and may accompany the inspection. The results of the inspection shall be provided to the owner or developer in writing within seven day of the inspection. Any problems encountered or suggestions generated during the inspection shall be noted.

1) The town may verify by inspection the Vegetation Survey and the Vegetation Preservation Schedule.

2) Any trees found by the Town's representative to be of potential North Carolina Champion or Matthews Specimen quality will be brought to the attention of the developer. A tree determined to be a Champion or Specimen Tree shall be classified as a Protected Tree and the developer shall be required to incorporate its protected status into the Landscape Plan for the site.

3) Changes to an Approved Plan. Minor changes or additions to existing development or approved plans may be submitted to the Planning Department as an abbreviated Landscape Plan.

(a) An abbreviated plan shall be allowed when the proposed change is physically limited to only a contained portion of the site. An abbreviated plan shall include, but not be limited to, items listed in §153.075(M)(2)(b), (f), (I), and (j). The Planning Department shall determine when an abbreviated plan may be submitted for a detailed plan and what items must be included.

(b) Any substitutions in plant species and varieties cited in the original landscape plan to be planted must be approved by the Planning Department before installation.

**(N) Preservation Standards**

(1) Shrub and Ground Cover Vegetation. The ground surface under any preserved shrub and groundcover should be disturbed as little as possible, following the basic standards for tree preservation.

(2) Trees. Existing trees specified on an approved landscape plan to remain on site during any land disturbing activity are protected trees. In addition, any land disturbing activity that may come within the drip line of a Matthews Specimen Tree or North Carolina Champion Tree or for any existing tree with an eight (8) inch DBH or larger, or any tree planted within the last three(3) years with a two (2) inch caliper or larger, having all or a portion of its trunk in or upon any public property shall be identified on site and protected as explained below.

(3) The Root Protection Zone Designation.

(a) For each inch of DBH a minimum of 1 foot of protected space from the trunk is measured in all directions. This area is designated as the Root Protection Zone. Unless physical obstructions are encountered within this area, the entire zone will receive protection. For tree stands the Root Protection Zone shall extend 5 feet beyond the perimeter dripline of the entire stand.

(b) All grading, construction, and site layout plans shall show the vertical elevation of the trunk at the soil line, the existing topography, and proposed grade changes within and

immediately surrounding the root protection zone.

(4) Protection Requirements of The Root Protection Zone.

- (a) A durable fence of plastic or wood with a minimum height of 4 feet shall protect the zone. No soil disturbance will occur in the zone. The fence will be maintained at all times during any land disturbing activity.
- (b) No storage of materials, piling of soil, parking of equipment, or dumping of debris shall occur in the zone.
- (c) The natural grade shall be maintained within the zone. Stripping topsoil from, or adding topsoil to, the zone is prohibited.
- (d) Excavation for buried utilities is prohibited. Boring may be permitted in individual situations.
- (e) No trenching for irrigation lines shall take place.
- (f) Removal of understory vegetation within the zone shall be restricted to hand-operated power equipment.
- (g) A minimum of one sign designating the Root Protection Zone shall be placed on the fence and should be visible for a minimum distance of 30 feet.
- (h) Minor pruning of branches to accommodate the construction of nearby buildings or planting of shrubs or ground covers within the zone can be allowed with the approval of the Town's landscape manager.
- (I) The Town will evaluate any requests for encroachment into the zone. Review of the request shall consider the overall needs of the site development. Utility line encroachments will be considered if the encroachment is unavoidable and damage to existing root systems is kept to an accommodating level. In these cases, encroachment will only be allowed on one side of the tree and no closer than two-thirds of the distance from the edge of the zone to the trunk.
- (j) The requirements of this section shall remain in effect throughout the construction period or the duration of the land disturbing activity.

**(O) Planting Standards.**

- (1) Except for Streetscape Trees, which can be variable, the minimum distance to the nearest property line

or public right-of-way for planting shall be six (6) feet for large trees and three (3) feet for small trees.

- (2) The minimum distance to a sidewalk, curb, or other impervious surface is four (4) feet for large trees and three (3) feet for small trees.

(3) For large maturing trees a minimum planting area of 256 square feet with a minimum dimension of eight (8) feet and a tree center no closer than four feet (4) to the edge of the planting area is required. For small maturing trees a minimum planting area of one hundred (100) square feet with a minimum dimension of eight (8) feet and a tree center no closer than three (3) feet to the edge of the planting area is required.

(4) Trees shall normally not be guyed or staked, except in an extreme situation to salvage a damaged tree after planting. If guying is employed, it must be removed as soon as possible or within one year at the latest. Mulch shall be applied (two- to three-inch layer around the tree pit) in accordance with accepted practices in the landscape industry.

(5) Adequate drainage shall be provided for all planting areas and specific plant materials shall be chosen to adopt to the anticipated drainage conditions.

(6) No trees identified as large maturing trees shall be located within thirty-five (35) feet from the center-line of a power distribution line.

(7) No planting identified as reaching a mature height of more than twenty (20) feet shall be placed within a transmission power line right-of-way.

(8) Normally, trees should not be planted within a utility easement. When a tree is to be located within an easement, a written statement to the Planning Department should indicate why this is necessary. When the planting is within a dedicated easement for underground utilities, trees planted shall be of the small maturing size to minimize future root conflict.

(9) At all points of egress from off-street parking areas to a road, and at corners of road intersections, unobstructed visibility for sight triangles shall be maintained as defined in 153.007.

(10) Tree holes shall normally be back-filled with the native soil that was excavated. Amending the soil with organic additives shall only be employed when extremely poor site conditions are encountered.

- (11) All trees and shrubs to be planted must comply with the American Standard for Nursery Stock, published

by the American Association of Nurserymen (current edition).

(12) Trees to be planted shall generally be on the town's approved tree list, provided as Section P of this chapter. The Planning Department must approve the use of trees not on the list.

**(P) Landscape Maintenance Standards.**

(1) General. The property owner and/or lessee shall maintain all landscape materials and landscape areas in accordance with the approved landscape plan. Maintenance shall include watering, weeding, mowing, fertilizing, treating, mulching, pruning, removal and replacement of dead or diseased trees and shrubs. Maintenance shall be performed on a regular basis in order to maintain plant vigor and stability, and to present a neat and well-kept appearance at all times.

(2) Duration of Maintenance. For preserved vegetation, maintenance shall begin at the time that the root protection zones are established (prior to rough grading) and shall continue indefinitely. For planted materials, maintenance shall begin at the time of planting and shall continue indefinitely.

(3) Mitigation for Loss of Protected Trees and Shrubs.

(a) If a protected tree is destroyed or dies within three (3) years after completion of construction, then replacement trees of total equal diameter shall be planted on the site. Tree destruction or death during this three (3) year period shall be assumed to be the result of the land disturbing activity unless the tree destruction is easily verified as due to a casualty loss of nature (storm, lightning strike, and the like, or the property owner provides documentation from a certified arborist of an alternate explanation for the tree's death.

(b) Any protected tree dying after the initial three (3) years shall be replaced with planted tree(s) of an approved species, with either a single tree of equal caliper to the lost tree or multiple new trees each with a minimum of 2-inch caliper. If 2" caliper tree(s) are planted, a total caliper equivalent to the lost tree determines the total quantity of replacement trees needed.

(c) Where possible, replacement trees should be of the same species as the lost tree(s). When the same species is not proposed, an explanation for the alternate selection, and what replacement species is proposed, shall be submitted to the Planning Department for approval prior to replacement.

(d) Replacement plantings shall normally be made within one month of the loss or within the first month of the next planting season. Any shrubs indicated on the Landscape Plan to be preserved, which later die, shall be replaced with the same species at a minimum size of 3 gallon, 3 foot height. Replacements for casualty loss fatalities must be made within one calendar year after the event.

(4) Mitigation for Loss of Planted Trees and Shrubs.

(a) Any planted tree or shrub dying during the first three (3) years after planting shall be replaced with a plant kind and size that was specified in the original plans.

(b) Any planted tree dying during the fourth year or later shall be replaced in the same location, with a tree, or trees, of the same type or value (using the Tree Evaluation Formula) of the loss, a minimum size of 2 inch caliper for small maturing trees and 4 inch caliper for large maturing varieties.

(c) Any shrub which dies after three years shall be replaced with the same species, minimum 3 gallon and 3 feet in height. Replacements for casualty loss fatalities of any trees or shrubs must be made within one calendar year after the event.

(5) Miscellaneous Maintenance Provisions.

(a) Topping. Trees and shrubs should generally be kept in their natural form. Topping of any landscape tree – planted or preserved - is prohibited.

(b) Purposeful Removal of Protected Trees.

(1) Purposeful removal of any tree approved in the original planting plan must be based on unsafe conditions from developing structural, insect, or disease problems. Only in the event of a written recommendation by a certified arborist or the town's landscape manager, and approval by the Planning Department, should removal take place.

(2) Prior to any replanting a replacement landscape plan must be submitted indicating trees by species and size at the time of removal. In addition, the plan should list any replacements by species, variety, and planting size. Generally a replacement landscape plan shall be considered an abbreviated plan, unless more than 20% of the preserved or planted trees and shrubs on

the original approved plan are scheduled for replacement.

(6) **Irrigation Requirement.** Unless otherwise approved, an irrigation system shall be provided to all landscaped, non-turf areas containing living plant materials.

(a) All irrigation systems noted in this Section shall be installed by a licensed master plumber, licensed sprinkler contractor or owner/builder and shall be maintained in proper operating condition.

(b) Low-volume irrigation systems such as drip or bubble systems are encouraged for use in order to conserve water.

(c) Sprinkler type irrigation systems are not encouraged within the town limits; however, when installed, they shall be designed to avoid spray that will fall on sidewalks, neighboring properties, and adjacent buildings.

(d) Any sprinkler system installed should be programmed to supplement normal rainfall, and should be operated to conserve water.

(e) An operable rain gauge is required on all automatically controlled systems.

(f) The installation of an irrigation system is not required on new plantings of all native plant materials or xeriscape plant species designated as such by the North Carolina State University, or on preserved vegetation when root protection zones have been identified and continuously maintained during all land disturbing activities.

(g) Before any irrigation system or portion of an irrigation system is installed within a public right-of-way or on any other public land, an encroachment permit must first be obtained from the Public Works Director or from NCDOT as applicable.

(h) Irrigation systems that water only landscape turf are not encouraged, but are not prohibited.

(7) **Maintenance Violations.** The property owner and/or occupant or lessee shall be held jointly liable for any infractions of the requirements set forth in §153.075(P).

(8) **Landscape Establishment Guarantee.** Proper maintenance of the planted and preserved trees and shrubs during the landscape establishment period shall be guaranteed by a Landscape Establishment Guarantee from

the property owner to the Town. The bond amount shall be equal to the value of the new trees, plus the lesser of \$20,000 for the preserved trees, or the actual value of preserved trees as calculated in accordance with The Guide for Plant Appraisal published by the Council of Tree and Landscape Appraisers (current edition). The bonding period shall be for a three (3) year period commencing from the date of successful inspection of the installation and preservation as being in compliance with the approved Landscape Plan for the site.

(9) **Seasonal Deferral Option.** During the months of June through August, or during a declared community-wide drought, a separate bond may be provided to the Town to allow a Certificate of Occupancy to be issued when all other construction requirements have been inspected and declared complete except for completion of landscaping. Such bond amount shall be equal to \$20,000 per each acre or fraction of acre of the total development site, plus the bid package price the property owner/developer received for completion of the landscaping elements of the development project. The Town Landscape Manager shall review the bid package price to determine it is appropriate to the amount of plant and hardscape materials remaining to be installed, and the labor required to complete the unfinished landscaping elements. This bond shall be issued in the name of the property owner to the Town, and shall be in effect for up to four months. No Certificate of Occupancy shall be issued for the site until the Town Landscape Manager confirms in writing to Mecklenburg County LUESA that the required bond has been accepted by the Town.

**(Q) Approved Tree List.** A list of approved trees for planting has been prepared to increase the likelihood of survival and to reduce maintenance requirements. All trees utilized should be generally adapted to the normal climatic and environmental conditions expected for the Matthews area. The listed trees satisfy these general criteria. This list is not intended to be a comprehensive survey, but it will serve as a guide to plant selection. Plants on the approved plant list shall normally be used in a landscape plan.

(1) Plants materials that are not on this list may be used if it can be shown that the selected species satisfies one or more of the following criteria:

(a) A species indigenous to the area that can be shown to be adapted to the proposed site conditions.

(b) A cultivated species that is well suited for use in this area.

(c) A non-indigenous species, meeting a specialized use that will not be adversely

affected by normal climatic environmental conditions.

(d) Any plant species that has been previously approved for use in a similar site situation.

(2) The use of any plant not on the list should be so noted on the Landscape Plan with a brief explanation of purpose.

## Approved Tree List

## Large Maturing Deciduous Trees

Common Name	Botanical name	Mature Height
Ash, Green*	Fraxinus pennsylvanica	50-60
Ash, White	F. Americana	50-80
Baldcypress	Taxodium distichum	50-70
Birch, River	Betula nigra	40-60
Black Gum*	Nyssa sylvatica	30-50
Cherry, Japanese	Prunus subhirtella	20-50
Weeping Hackberry	Celtis occidentalis	40-60
Common Hackberry	Celtis laevigata	60-70
Sugar Ginkgo	Ginkgo biloba	50-80
Katsura Tree	Cercidiphyllum japonicum	40-60
Maple, Red*	Acer rubrum	40-60
Maple, Sugar*	Acer saccharum	60-75
Oak, Chestnut	Q. prinus	60-70
Oak, Laurel	Quercus hemisphaerica (laurifolia)	40-60
Oak, Northern Red	Q. rubra	50-60
Oak, Pin	Q. palustris	60-70
Oak, Sawtooth	Q. acutissima	40-60
Oak, Shumard	Q. shumardii	40-60
Oak, Southern Red	Q. falcata	70-80
Oak, Water	Q. nigra	50-80
Oak, White	Q. alba	50-80
Oak, Willow	Q. phellos	70-90
Pagoda Tree, Japanese*	Sophora japonica	50-60
Sycamore	Platanus occidentalis	75-100
Tulip Poplar	Liriodendron Tulipifera	70-90
White Willow	Salix alba	75-90
Zelkova, Japanese*	Zelkova serrata	50-80

## Small Maturing Deciduous Trees

Common Name	Botanical Name	Mature Height
Chaste Tree	Vitex negundo	15-20
Cherry, Japanese*	Prunus serrulata	15-25
Cherry, Yoshino	P. X yedoensis	20-25
Cherry - Laurel	P. Caroliniana	15-25
Crabapple, Flowering*	Malus sp.	7-25
Crepe Myrtle*	Lagerstroemia sp.	15-25
Dogwood, Flowering*	Cornus florida	15-30
Dogwood, Kousa	Cornus kousa	10-15
Goldenrain Tree*	Koeleruteria paniculata	20-30
Hawthorn*	Crataegus	15-30
Hornbeam	Carpinus betulus	20-30
Magnolia, Saucer	Magnolia soulangiana	20-30
Magnolia, Sweetbay*	M. Virginia	10-20
Magnolia, Star*	M. Stellata	15-20
Maple, Amur	Acer ginnala	15-20
Maple, Hedge	A. Campestre	15-25
Maple, Japanese*	A. Palmatum	15-25
Myrtle, Wax	Myrica cerifera	10-15
Chanticleer Pear**	Pyrus calleryana	20-30
Althea*	Hibiscus syriacus	8-12
Eastern redbud*	Cercis Canadensis	20-30
Serviceberry	Amelanchier sp.	10-20

**Evergreen Trees**

<b>Common Name</b>	<b>Botanical Name</b>	<b>Mature Height</b>
Eastern Red Cedar	Juniperus virginiana	20-30
Holly, American*	Ilex opaca*	20-40
Holly, Chinese (Tree Form)	Ilex cornuta*	8-15
Holly, Foster	Ilex x attenuata	20-30
Holly, Hume	Ilex x attenuata	25-35
Holly, Nellie R Stevens	Ilex x Nellie R Stevens	15-25
Holly, Yaupon*	Ilex vomitoria	15-20
Holly, Savannah*	Ilex x attenuata	25-30
Magnolia, Southern*	Magnolia grandiflora	60-80
Pine, Loblolly	Pinus taeda	60-90
Pine, Shortleaf	Pinus echinata	80-100
Spruce, Norway	Picea abies	40-60

\* Many varieties available

\*\* Recommended as substitute for Bradford or Aristocrat Pears

Many native plant materials are not mentioned in this list. On certain sites, they offer a great deal of benefit and suitability to the landscape. In this regard, the Town will entertain specific recommendations.

(Ord. 1598, passed 10-8-07)